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NOTES ON GEOGRAPHIC DISTRIBUTION

Amphibia, Centrolenidae, *Hyalinobatrachium iaspidiense*: Distribution extension

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Centrolenidae is a monophyletic family (Ruiz-Carranza and Lynch 1991; Guayasamin et al. 2008) that contains twelve genera (Guayasamin et al. 2009). Recent research on glassfrogs has substantially increased our understanding of their evolution (Guayasamin et al. 2008), morphology (Cisneros-Heredia and McDiarmid 2007; Guayasamin and Trueb 2007), and behavior (Señaris and Ayarzagüena 2005; Kubicki 2007). However, there are still gaps in our basic knowledge of their distribution and ecology.

Hyalinobatrachium iaspidiense was described from the Guayana region of Venezuela (type locality = Quebrada de Jaspe) by Ayarzagüena (1992). Until recently, it was though to be endemic to the Guayana region (Señaris and Ayarzagüena 2005), but now it seems that the species could actually be distributed across the Amazon basin (Yánez-Muñoz et al. 2009). Among centrolenids, *H. iaspidiense* can only be confused with *H. mesai* (Barrio-Amoros and Brewer-Carias 2008). In life, the two species share a unique color pattern, a green dorsum with large lime-green blotches and small black spots (Ayarzagüena 1992; Señaris and Ayarzagüena 2005; Barrio-Amoros and Brewer-Carias 2008) that is not present in any other glassfrog. The only conspicuous difference between them is that *H. iaspidiense* has white bones, whereas *H. mesai* is reported to have green bones (Barrio-Amoros and Brewer-Carias 2008). The morphological resemble between *H. iaspidiense* and *H. mesai* is so remarkable that we consider likely that they actually represent one species. Therefore, an integrative taxonomic approach is needed to assess the validity of *H. mesai* (see Padial et al. 2009). Recently, *H. nouraguense* was placed under the synonymy of *H. iaspidiense* (Yánez-Muñoz et al. 2009) based on morphological (Ernst et al. 2005; Cisneros-Heredia and McDiarmid 2007) and genetic data (Guayasamin et al. 2008).

In Ecuador, *Hyalinobatrachium iaspidiense* is known from a single locality (Totoa Nai'qui, territory of Cofán-Dureno, province of Sucumbíos; 0°02'3.91" S, 76°45'10.01" W, *ca.* 280 m). In this study, we report a new record of *H. iaspidiense* from Ecuador and provide a characterization of the habitat where this rare species was found. Also, we report the results of a DNA-based test for chytridiomycosis.

Figure 1. *Hyalinobatrachium iaspidiense* in life.

One individual of *Hyalinobatrachium iaspidiense* (female, QCAZ 38438) was found on 02 September 2008 by Susan North and Eleanor Clapp in a stream within the Yachana Reserve (0°52'21.71" S, 77°14'13.43" W; 300-350 m),

Check List **5**(3): 526–529, 2009.
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NOTES ON GEOGRAPHIC DISTRIBUTION

province of Napo, Ecuador. The specimen was fixed and preserved in ethanol 95% (no formalin was used) and is housed in the herpetological collection of the Museo de Zoología, Pontificia Universidad Católica del Ecuador (QCAZ). Climatic data were obtained with a radio-controlled weather station (Europe Supplies Ltd. WS-868015, 868 mHz). A PCR-based test for chytridiomycosis was performed by Elisa Bonaccorso, following the methodology described by Annis et al. (2004).

Diagnosis: *Hyalinobatrachium iaspidiense* is easily distinguished from all other glassfrogs by having, in life, a pale yellowish green dorsum with large, irregular green marks and small black spots (Figure 1). Ventrally, the parietal peritoneum is completely transparent, revealing a red heart (transparent pericardium). The liver and digestive tract are covered by a white visceral peritoneum, while the peritoneal covering of the urinary bladder is transparent. Males of this species lack humeral spines.

Habitat: The individual of *Hyalinobatrachium iaspidiense* was found at about 19:30 h on a long blade of a tall grassy shrub over-hanging the water in the middle of the largest stream (Stream 1) that runs through the reserve. The stream habitat is variable along its length (~ 2500 m within reserve), but the individual was found in a shallow area (~ 20 cm deep) where the stream becomes a riffle and is fast moving. At this point, the stream is about 4 meters wide, and its bottom consists of about 80 % pebbles and small rocks and 20 % sand along the shore. Tall grassy shrubs (such as the one the individual was found on) are sparse in mid-stream but dense on the banks (Figure 2). Here, the forest adjacent to the stream is about 25-30 m high. The area is relatively undisturbed with the exception of a foot trail named B-loop (~ 1-2 m wide) that runs perpendicular to the stream. Stream 1 runs through primary forest where individual was found and exits the reserve almost directly into cattle pasture, which surround the reserve almost entirely along its perimeter. The Napo River is adjacent to the reserve on one side. The forest is disturbed by human traffic. Hunting and incidental logging also occur along the reserve boundary. Pollution from agricultural herbicides and pesticides may be a problem, although this has not been shown directly. Certainly DEET is introduced into the waterway by volunteers working at the Yachana Reserve.

Abundance and ecological remarks: Amphibian surveys at Yachana Reserve have been continuous during the last two years, with a total of about 336 survey hours per year. During this period, only one individual of *Hyalinobatrachium iaspidiense* has been found. At Yachana Reserve, about 70 species of amphibians have been registered. Some of the most common taxa are *Pristimantis malkini*, *P. conspicillatus, Osteocephalus cabrerai, Hypsiboas geographicus* and *Lithobates palmipes*. In general, glass frogs were extremely rare in the reserve, with one or two individuals being found every 10-week expedition. The most common of these was *Teratohyla midas*. Other centrolenids at Yachana Reserve include *Cochranella resplendens* and *Vitreorana oyampiensis*.

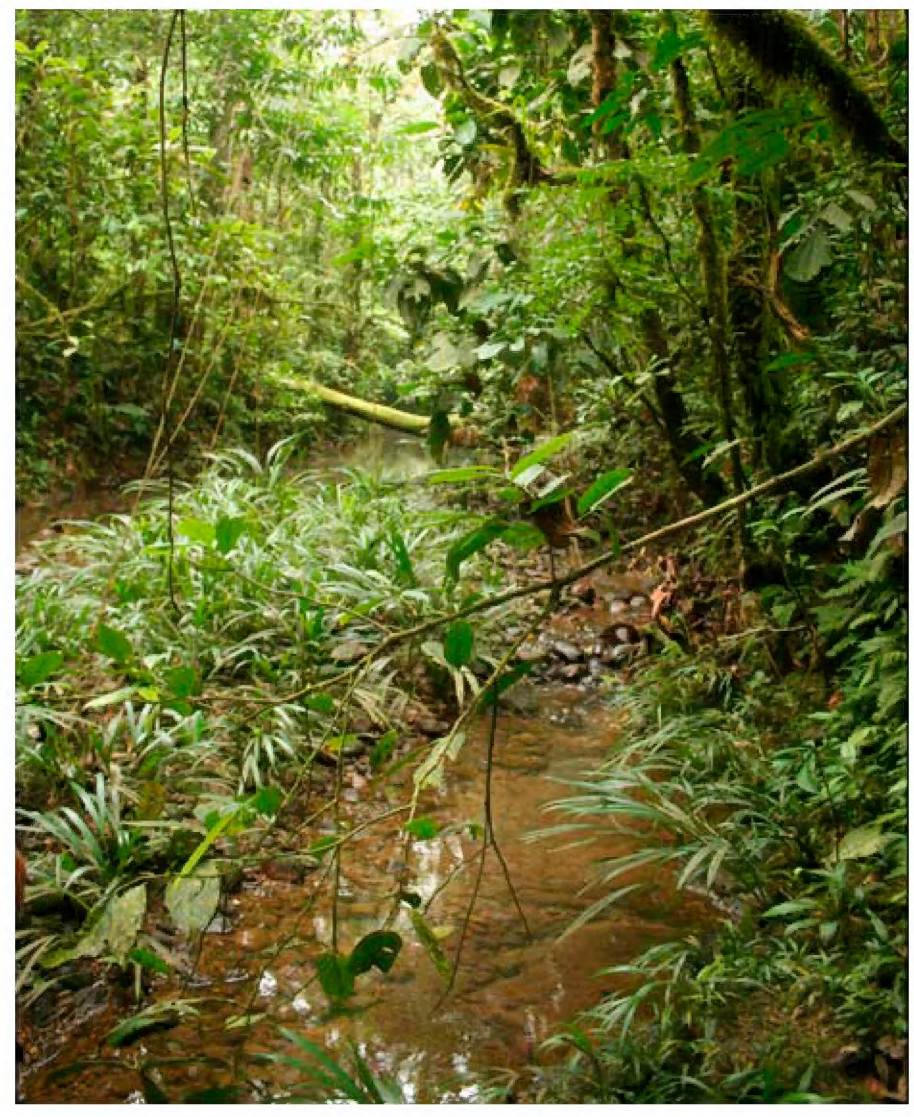

Figure 2. Habitat where *H. iaspidiense* was found at Yachana Reserve. Photo by Matt Magnus.

Check List **5**(3): 526–529, 2009.
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NOTES ON GEOGRAPHIC DISTRIBUTION

Chytridiomycosis: A PCR-based diagnosis of the chytrid fungus *Batrachochytrium dendrobatidis* tested negative for this specimen (Swab# SC 21656).

Weight and body size: The individual of *Hyalinobatrachium iaspidiense* had a weight = 0.8 g and a SVL = 22.6 mm.

Climatic data (recorded at 18:00 h, 02 September 2008): Air Temperature = 25.8 °C; Relative Humidity = 88 %; Barometric Pressure = 969.7; Cloud Cover = 80 %; Rainfall = none; Rain within 24 hrs = none.

Remarks: The wide distribution of *Hyalinobatrachium iaspidiense* (*i.e.*, Amazonian lowlands and Guiana Shield) is unusual for glassfrogs, which usually are restricted to relatively small areas. Morphologically, the populations from Venezuela, Guyana, Suriname, French Guiana, Brazil, and Ecuador are remarkably similar (see Yánez-Muñoz et al. 2009). Genetic analyzes with a very limited sample size (three individuals) have shown genetic divergence that might correspond to, at least, two cryptic lineages (Guayasamin et al. 2008). However, a much more complete analysis is required in order to understand the variation within what we now identify as *H. iaspidiense*.

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NOTES ON GEOGRAPHIC DISTRIBUTION

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